Review

Anxiety, Depression, and Other Emotional Disorders during the COVID-19 Pandemic: A Narrative Review of the Risk Factors and Risk Groups

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Abstract: The COVID-19 pandemic has affected many aspects of our lives, including mental health. Identifying risk factors and risk groups associated with anxiety, depression, and other emotional disorders for reasons related to the COVID-19 pandemic is highly relevant. This narrative review aims to summarize the evidence to date on risk factors for emotional disorders during the COVID-19 pandemic in order to identify the risk groups of people in need of early psychiatric and psychological assistance, point out the controversial data on the influence of risk factors on emotional disorders in COVID-19, and finally offer recommendations for alleviating symptoms of anxiety, depression, and other emotional disorders in such people. According to the current literature, being under the age of 40, being female, having contact with a COVID-infected person, and watching the news about COVID-19 for more than 3 h a day all increase the likelihood of anxiety, depression, and sleep disturbances. Healthcare workers, particularly nurses, working in the COVID-19 hot zone suffer more from sleep disorders, anxiety, and depression. It is also noted that people with a previous psychiatric history, in addition to increased risks of anxiety and depression, have an increased risk of relapse during the COVID-19 pandemic. The same is true for people who have had episodes of substance abuse in the past. Aside from socioeconomic factors, the mental wellbeing of those who have had COVID-19 is also impacted by biological factors (using anti-COVID-19 drugs, COVID-19-associated immunothrombosis and venous thromboembolism, interferon-gamma-related cytokine storm, etc.), resulting in a wide range of acute and long-term cognitive disorders. During the restricted resource time, the aforementioned risk groups should be prioritized for prevention, early identification, and proper treatment of potential emotional disorders. The risk factors that were found in this narrative review, as well as how they interact and change over time, will help understand why some studies of at-risk groups do not agree with each other, justify new preventive measures, and strengthen existing programs to keep people’s mental health in check during this pandemic and other emergencies.

Keywords: COVID-19; risk factors; self-isolation; lockdown; mental health; emotional disorders; anxiety; depression; stress disorder; suicidal behavior
1. Introduction

On 11 March 2020, the World Health Organization (WHO) declared the start of a coronavirus disease 2019 (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The COVID-19 pandemic was marked by the implementation of unprecedented restrictive measures around the world, such as self-isolation [2] and the use of personal protective equipment (PPE) in public places [3]. This led to a forced change in people’s behavior and, against this background, changes in their emotional state. These measures and other risk factors associated with the pandemic can negatively impact mental health and cause emotional disorders [4].

Research from years prior to the COVID-19 pandemic suggests that depression, anxiety disorders, substance abuse, behavioral addictions, self-harm, and post-traumatic stress disorder (PTSD) commonly follow major economic crises, new pandemics, or natural disasters [5–8]. For example, the previous human immunodeficiency virus (HIV) pandemic and the emergence of new recombinant forms and strains of HIV [9,10] have been proven to contribute to the deterioration of mental health in society [11]. Another example is that the frequency of cigarette, alcohol, and psychoactive drug consumption in the US has significantly increased since the September 11 attacks [12]. It was found that stress plays a crucial role in provoking substance abuse [13].

The drastic changes in people’s lives and the many aspects of the global, public, and private economy associated with the current COVID-19 pandemic have become a source of great stress for many people [14]. Financial instability and unemployment, death of loved ones and isolation, fear of infection, school and daycare closures, travel restrictions, the sudden shift to working from home, bans on social gatherings, and other changes in social life and everyday life have contributed to an increase in domestic violence [15], increasing dependence on psychoactive substances and video games [5,8,15], and the general deterioration in the mental health of citizens during the COVID-19 pandemic [16–24]. When the immediate threat of the virus wanes, the long-term effects of the COVID-19 pandemic could make it difficult for many people to return to a normal emotional state.

One of the most studied and frequently observed effects of the COVID-19 pandemic is depression, which significantly increases the appearances of many somatic diseases, including Alzheimer’s disease (2.0 times), cardiovascular diseases (1.5–2.0 times), stroke (1.8 times), epilepsy (4.0–6.0 times), diabetes (1.6 times), and cancer (1.0–1.3 times) [25], and increases the risk of suicide by 25 times [26]. During the COVID-19 pandemic, there has been a sharp increase in the use of drugs for depression, i.e., antidepressants. Antidepressants have many side-effects, including weight gain, sexual dysfunction, hypotension, and dyspeptic symptoms. Noncompliance or discontinuation of medication can lead to relapse of depression and increase the risk of suicide [25]. As a result, identifying risk groups for people who may be depressed is becoming more important. Adopting preventive measures against depression, anxiety, suicidal behavior, and other emotional disorders should become a public health priority to reduce the population’s economic and drug burden.

Some risk groups are more vulnerable and require more support and attention during the COVID-19 pandemic. Unfortunately, a greater need for psychological help does not mean a greater appeal for it. A study among medical staff found that people with three psychological problems received less care than people without any disorders [27]. Thus, risk groups and risk factors for emotional disorders, especially anxiety and depression, during the COVID-19 pandemic/lockdown and beyond the post-COVID period have not yet been clearly defined. The identification of such risk factors and the identification of risk groups will allow the development of better recommendations for the prevention of emotional disorders and the improvement of mental health.

Therefore, this narrative review aims to summarize the evidence to date on risk factors for emotional disorders during the COVID-19 pandemic in order (1) to identify the risk groups of people in need of early psychiatric and psychological assistance, (2) to point out the controversial data on the influence of risk factors on emotional disorders in COVID-19,
and finally (3) to offer recommendations for alleviating symptoms of anxiety, depression, and other emotional disorders in such people.

2. Materials and Methods

In this narrative review, we collected information and recommendations on aspects of the emotional disorders (especially anxiety and depression) of at-risk groups during the COVID-19 pandemic and identified risk factors for the development of such disorders. A nonsystematic approach was used for searching for information over the past 2.5 years (November 2019–February 2022) in Embase, MEDLINE, PubMed, Web of Science, and Google Scholar databases. The key words were “COVID-19”, “self-isolation”, “social isolation”, “lockdown”, “mental health”, “emotional disorders”, “anxiety”, “depression”, “stress disorder”, and “suicidal behavior”. The 100 most read original articles and meta-analyses in each database were selected using various combinations of keywords. Inclusion criteria were original articles and meta-analyses on emotional disorders and mental health during the COVID-19 pandemic. Original articles and meta-analyses on the neurological and somatic consequences of the COVID-19 pandemic were excluded, as were clinical studies where patients did not need professional psychiatric help.

We outlined the main findings of the articles on the impact of the pandemic on the most vulnerable groups of the population: healthcare workers, people with mental health problems, and COVID-19 survivors. Risk factors were identified for each of the groups. Modifiable and nonmodifiable risk factors for the general population, such as gender, age, pregnancy, viewing news about COVID-19, and socioeconomic factors, are also highlighted. Particular attention was paid to the fact that risk factors are summed up and reinforce each other. On the basis of the established associations between risk factors and emotional disorders during the COVID-19 pandemic, we propose preventive measures.

3. The Effect of the COVID-19 Epidemic on Mental Health and the Development of Emotional Disorders

There are many reviews on discussions in studies [28–33] about the effect of the COVID-19 lifestyle, including quarantine and isolation, on mental health and the development of emotional disorders. Studies of the quarantine influence on people during previous epidemics found increased mental health risks [16,34]. A recent study on the consequences of pandemic isolation showed that stressors such as prolonged quarantine, fear of infection, frustration, boredom, lack of access to adequate information, and financial problems led to the appearance of long-term symptoms of post-traumatic stress and depression, as well as anxiety disorders, sleep disorders, panic attacks, low self-esteem, and decreased self-control [17].

Previous studies showed that social isolation worsens health and increases the risk of death in the elderly [35], worsening the course of coronary artery disease [36] and affecting the likelihood of being hospitalized for congestive heart failure [37]. In another review (k = 41, n = 20,069), social isolation worsened the mental health of the elderly, thus increasing the risk of depression, anxiety, and sleep disturbances [30].

A systematic review and meta-analysis compared the mental health of nonquarantined and quarantined people. Quarantine or isolation was found to be an independent risk factor for adverse mental health outcomes, increasing risks of depression 2.795-fold (95% CI 1.467–5.324), anxiety 2.0-fold (95% CI 0.883–4.527), and stress response disorders 2.742-fold (95% CI 1.496–5.027) [38]. Another study of 932 participants showed that people in isolation were at greater risk for anxiety and depression [39]. Loneliness has been shown as a factor increasing alcohol use during depression [19].

A lockdown study by Lei and colleagues among 1593 respondents aged 18 and over in southern China reported that the growth of anxiety (8.3%) and depression (14.6%) with a much higher prevalence of symptoms (12.9%, 22.4%) appeared among individuals who had someone in their immediate environment who was quarantined for COVID-19, compared
with a control group without quarantined loved ones (6.7%, 11.9%). This study used anxiety and a self-reported depression rating scale to assess mental health status [16].

Quarantine of Chinese students led to the prevalence of PTSD and depression 2.7% and 9.0%, respectively, and the decrease in the amount of sleep correlated with the likelihood of future mental and emotional disorders. The PTSD checklist, the depression 9-Item Patient Health Questionnaire (PHQ-9), and data on sleep duration and quality were assessed [32].

Cases of suicide committed in fear of COVID-19 have been found in the literature from India, Pakistan, and Bangladesh [26,40–42]. Japan’s first COVID-19-related death was not due to the virus; a government official responsible for returning citizens from Wuhan died by suicide [28]. One can assume the prevalence of similar cases around the world. However, there are no exact data due to the specifics of the event; not everyone leaves suicide notes and, moreover, even scientists have limited access to the available data.

With a pandemic of depression, anxiety, and sleep disturbances, individual responses to the fear of contagion may vanish from the radar of scientists. Behavioral studies with other viruses have shown the emergence of self-infection tendencies to reduce anxiety and fear. For COVID-19, this behavior has not yet been studied and may be a topic for future research [43].

3.1. The Role of Gender in the Importance of Risk Factors for Emotional Disorders during the COVID-19 Pandemic

Much research has revealed that females are at a higher risk of depression, anxiety, and insomnia [23,44–47]. This is consistent with known gender differences in the occurrence of anxiety and depression [48,49].

An examination of the mental health of healthcare professionals during the COVID-19 pandemic found that indications of affective disorders were more frequent among women. As a result, anxiety was prevalent in 29.06% of women and 20.92% of males. It is worth mentioning that, in the group of women, nurses had a higher risk of infection than doctors, thus also influencing anxiety levels. This research also revealed that nurses have a greater prevalence of anxiety and depression than physicians [44]. In another study by Li and her team, insomnia symptoms were found to be linked to being female ($p = 0.042$) [46].

In a systematic study of the effects of isolation on mental health, Henssler and colleagues discovered that women were more likely than males to suffer from depression and PTSD. On the other hand, men were at a greater risk for alcohol use disorders [38]. Research conducted by Özdin in Turkey, which was connected with the aforementioned results, found that women had greater levels of anxiety and sadness [45]. According to a study of how the COVID-19 pandemic affected the mental health of Chinese high school students [23], the female gender was also a major risk factor for anxiety and sadness.

According to Guo and colleagues’ research, women had greater levels of feeling helplessness than males, but not other mental problems [50]. In turn, Liang and colleagues discovered that, compared to women, males scored considerably higher on the 12-Item General Health Questionnaire (GHQ-12) and PTSD scales, corresponding with PTSD symptoms and poor overall mental health [22]. Surprisingly, the study did not include any of the commonly found relationships, such as socioeconomic status and mental health [51,52]. According to a Chinese meta-analysis ($n = 5153$), COVID-19 survivors experienced anxiety, sadness, and sleep disruption regardless of gender. However, different rating measures were used in all relevant studies [53].

Women exhibit greater levels of worry and sleeplessness than men, according to a study of COVID-19 patients admitted to a hospital in Japan during the first wave (from early March to late May 2020). However, no gender difference was seen for the second wave (from early June to late August 2020) [54].

3.2. The Role of Age in the Importance of Risk Factors for Emotional Disorders during the COVID-19 Pandemic

Huang and Zhao found that the risk of developing generalized anxiety disorder was significantly higher in young people than in older people [55]. Another review ($n = 10,139$)
showed that, among Americans of all ages, the highest levels of mental discomfort, including symptoms of anxiety and depression, were between the ages of 18 and 29 [47].

Despite the absence of a control group of a different age in the study, it is interesting to note the high prevalence of anxiety and depression or a combination of both among Chinese adolescents during the pandemic (37.4%, 43.7%, and 31.3%, respectively) [23]. According to the questionnaire results, the risk of anxiety was 60% lower for people after 40 years [47].

However, Chew and colleagues found that emotional disorders are more common among the elderly, contradicting the above data [56]. It should be remembered that social exclusion can pose a particular threat to the elderly due to the reduction of economic and social resources, reduced mobility, and death of relatives and spouses [57]. High susceptibility of older people to the reduced physical activity due to quarantine has resulted in an increased risk of being hospitalized for cardiovascular disease, as well as a risk of death from all causes [36,37,39].

In a review looking at the mental health of older people during the pandemic, the lockdown period significantly worsened the mental wellbeing of older people, increasing the risks of anxiety, depression, and sleep disturbances [30].

3.3. The Role of Pregnancy in the Importance of Risk Factors for Emotional Disorders during the COVID-19 Pandemic

Depression is a common complication of pregnancy and the postpartum period [58]. According to the World Health Organization, about 10% of pregnant women and 13% of (recent) mothers suffer from an emotional disorder, primarily depression [59]. A large international pre-COVID-19 perinatal mental health study found that 4% to 8% of women have moderate to very severe depressive symptoms during pregnancy and the postpartum period [60]. Maternal suffering may be exacerbated by concerns about the risk of infection or hospitalization due to COVID-19, especially in relation to the description of perinatal morbidity and mortality associated with COVID-19 [61–63]. This, in addition to the physiological predisposition of pregnant women to contract infections due to changes in the immune and cardiopulmonary systems [64], suggests a high risk of affective disorders for women who become mothers during the COVID-19 pandemic.

The Novel Coronavirus Pregnancy Cohort study (NCP) and the Healthy Baby Cohort (HBC) assessed the prevalence of depression in pregnant women. NCP was performed during the COVID-19 pandemic, while HBC was performed before the pandemic. Rates of mild and moderate–severe depression in the NCP study were 25.8% and 10.36%, respectively, while they were 19.94% and 0.55% in the HBC study [65].

According to the results of an online survey of 729 pregnant women during the COVID-19 pandemic, anxiety, depression, and stress of moderate or severe severity were registered in 62.2%, 44.6%, and 32.2% of women, respectively. The same survey showed the sensitivity of pregnant women to additional stress; pregnant women who lost their jobs during the COVID-19 pandemic showed a threefold increase in the risk of anxiety, a sixfold increase in the risk of depression, and a 4.8-fold increase in the risk of stress [66].

Research over the past two decades has shown an association between prenatal maternal psychological distress and poor obstetric, fetal, and neonatal outcomes [67–69].

Treatment options for mood disorders are limited because antidepressant exposure is associated with preterm birth, reductions in birth weight, persistent pulmonary hypertension, and PNAS, as well as a possible connection with autism spectrum disorder [58,70]. Therefore, the prevention of affective disorders during pregnancy remains a significant public health goal.

3.4. The Importance of Other Risk Factors for Emotional Disorders during the COVID-19 Pandemic

Huang and colleagues found that discussing, reading, and watching the news about COVID-19 for more than 3 h a day was associated with generalized anxiety disorder [55]. Findings from another recent study suggest that, during the COVID-19 pandemic, the
widespread use of face masks could mitigate stress levels among the population by assuring that one can protect their health and the health of others, including other members of the community who are also wearing masks [71].

In a meta-analytic and systematic review including data from 33 countries (k = 114, N = 640,037), the population prevalence of depressive symptoms was negatively correlated with the severity of government-imposed COVID-19 restrictions (adjusted for infection prevalence, index of access to healthcare, and enrollment in trials of patients with COVID-19). Moreover, the risk of depression was higher in developed countries, whereas, before the COVID-19 pandemic, residents of developing countries were more likely to suffer from depression [72].

Data on modifiable and nonmodifiable risk factors identified for the general population, such as gender, age, pregnancy, exposure to COVID-19 news, and socioeconomic factors that impact mental health, leading to emotional disorders, during COVID-19 are shown in Table 1. The same table also lists the controversial data found on the impact of risk factors on emotional disorders in COVID-19.

Table 1. Established general population risk factors for emotional disorders during the COVID-19 pandemic.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Emotional Disorders and Their Symptoms</th>
<th>Discussion/Controversial Data</th>
<th>Reference</th>
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</table>
| Female gender      | • Women are more likely to suffer from anxiety, depression, and sleep disorders | • Women had fewer symptoms of PTSD 2 weeks after the start of the COVID-19 pandemic. The predominance of anxiety and depression was not observed in all studies.  
• There was no gender difference in the prevalence of anxiety and depression among COVID-19 survivors.  
• Anxiety and depression were more prevalent in the first but not the second wave of the COVID-19 pandemic in Japan. | [22,23,44–46,53] |
| Age from 18 to 29 years old | • The highest likelihood of an anxiety disorder  
• High prevalence of anxiety, depression, or both | • Mental problems were more common in the elderly.                                                                                           | [23,30,47,56] |
| Pregnancy          | • Increase in anxiety, depression and stress in pregnancy  
• Maternal suffering exacerbated by concerns about the risk of infection or hospitalization due to COVID-19, especially in relation to the description of perinatal morbidity and mortality associated with COVID-19 | -                                                                                                           | [61–63]   |
|                    | • Shrinking economic and social resources  
• Death of family and spouses  
• Decreased physical activity  
• Loneliness, isolation  
• Poverty and job loss  
• Watching the news about COVID-19 for more than 3 h a day | • Increase in anxiety, depression, and stress  
• Suicidal behavior | -                                                                                                           | [55–57]   |
3.5. Emotional Disorders during the COVID-19 Pandemic in People with Comorbid Mental or Physical Health Problems

Depressed patients have shown a featured inflammatory response, as well as increased secretion of proinflammatory cytokines, which may worsen the prognosis of COVID-19 [73]. Higher concentrations of IL-1β, IL-6, IL-4, IL-10, IFN-γ, CXCL10, and CCL2 are known to suggest more severe mental health outcomes due to neuroinflammation, disruption of the blood–brain barrier, invasion of immune cells into the central nervous system, dysfunction of the hypothalamic–pituitary axis, and activation of microglia [74]. Moreover, the most common conditions among psychiatric patients are type 2 diabetes, cardiovascular disease, and coronary disease, which significantly worsen the prognosis of COVID-19 [75–77].

Psychiatric patients often face limited access to healthcare services, which leads to higher levels of anxiety during the COVID-19 pandemic. A disease relapse can make it difficult to maintain personal hygiene and distance from people with respiratory symptoms. All this makes the group of people with pre-existing mental health problems extremely vulnerable to the psychological and other consequences of COVID-19 [75]. A recent study showed that levels of anxiety, depression, PTSD were significantly higher in a group of patients with a history of psychiatric illness than in the control group (p < 0.001). The scales ‘Impact of Event Scale—Revised’ (IES-R) and ‘Depression, Anxiety, and Stress Scale—21 Items’ (DASS-21) were used for evaluation [76,78]. Previous mental illness and psychiatric patient treatment led to greater anxiety in a meta-analysis in comparison with the mental health effects of previous quarantines. A history of traumatic brain injury was associated with a higher risk of depression. Moreover, in cases when symptoms of depression, PTSD, and episodes of alcohol use appeared in histories of people with avoidance of problem situations [38], there was a higher risk of developing alcohol dependence.

Substance abuse increased the risk of infection and adverse outcomes of COVID-19, while heightened levels of social stress, anxiety, and quarantine-related isolation played a large role in the spread of the substance abuse and behavioral dependence during the COVID-19 pandemic [79]. Many patients in a drug treatment clinic in Ireland cited COVID-19 as a cause of substance abuse [79]. The quality of preventive care for dependent people is declining due to COVID-19 pandemic-related bans, as well as due to the fact that large resources are devoted to fighting the virus [80]. Restrictions on group therapy are considered an important step in treatment and a way to reduce anxiety, potentially worsen the condition, and increase the risk of relapse of substance abuse [79]. The COVID-19 pandemic is also reducing the access of opioid-injecting drug users to substitution therapy, and the proposed relaxation of legislation on self-injection prescriptions for methadone and buprenorphine in a number of countries poses a risk of overdose [15].

During the COVID-19 pandemic, visits to social media, porn sites, online casinos, and online video games increased, suggesting the spread of behavioral addiction [8,81]. This leads to altered circadian rhythms and decreased activity, which in turn can lead to cardiometabolic disorders, diabetes, and obesity [15]. Increased hours spent online gaming or viewing porn sites were positively correlated with symptoms of depression and anxiety [8].

3.6. Emotional Disorders during the COVID-19 Pandemic in Healthcare Workers

Healthcare workers are a particular group facing specific challenges during this pandemic. Lack of proven effective etiotropic treatment, medicines, and equipment, as well as frequent helplessness in the course of the disease, creates a feeling of guilt and fears about the possibility of transmitting the virus to the family, making health workers susceptible to anxiety and depression [13,82–86]. In addition, working without adequate personal protective equipment and other preventive measures increases the fear of contracting an infection. Over time, night work often leads to fatigue, burnout, and sleep problems; 47% of healthcare workers complained of sleep disturbances, with shift workers having more severe insomnia [82].
In a review by Busch and colleagues of 75,991 participants, healthcare staff reported a wide range of symptoms, including concerns about the family transmission (60.39%, 95% CI 42.53–76.96), concerns about own health (45.97%, 95% CI 31.08–61.23), sleep problems (39.88%, 95% CI 27.70–52.72), burnout (31.81%, 95% CI 13.32–53.89), symptoms of depression (25.72%, 95% CI 18.34–33.86), symptoms of anxiety (25.36%, 95% CI 17.90–33.64), and symptoms of post-traumatic stress disorder (24.51%, 95% CI 18.16–31.46) [84]. Another multinational study found a bidirectional association between psychiatric and somatic symptoms such as headache [56]. A review by Pappa and colleagues showed higher risks for those who worked in the red zone [44]. Medical staff in close contact with patients with COVID-19 were 1.4 times more likely to experience fear and two times more likely to experience anxiety and depression than administrative workers in the same hospital. This crossover study used the Hamilton Anxiety Scale (HAMA) and the Hamilton Depression Scale (HAMD), enrolling 2299 participants, 2042 of whom were healthcare workers and 257 of whom were administrative staff [87]. Other studies confirmed a bidirectional association between psychiatric and somatic symptoms, such as headache, among medical staff [56].

A similar study compared the prevalence and severity of depression, anxiety, sleep disorders, and general mental wellbeing (using the Symptom Check List—90—Revised (SCL-90), Riker Sedation Agitation Scale (SAS), Self-Rating Depression Scale (SDS), Post-Traumatic Stress Disorder Checklist: Civilian Scale (PCL-C), and Pittsburgh Sleep Quality Index (PSQI)) among doctors and nurses (n = 60) from a COVID-hospital with doctors and medical nurses who do not have a contact at work with patients with COVID-19 (n = 60). The total scores for all scales (SAS (45.89 ± 1.117), SDS (50.13 ± 1.813), and PCL-C (50.13 ± 1.813) for patients from the first group were significantly higher than in the second. It is extremely remarkable that all 100% of participants from the first group reported insomnia of varying severity; seven employees had mild insomnia (11.67%), 37 employees had moderate insomnia with a total score of 12 to 16 (61.67%), and 16 employees had severe insomnia [88].

According to the results of a survey among female medical workers (n = 4369), stress predictors were more than 10 years of work experience, chronic somatic or mental illness, confirmation of COVID-19 in one’s inner circle, and two or more children. A history of alcohol abuse was associated with more significant risks of anxiety and depression [83]. Furthermore, medical staff who felt they were at greater risk of infection and that the infection was difficult to treat were at greater risk of negative mental health outcomes [85]. An anonymous survey of 4679 physicians and nurses on the long-term stress, anxiety, and depression (using the Self Reporting Questionnaire 20-Item (SRQ-20), SAS, and SDS scales) found that nursing work, average age, experience with COVID-19, and predominantly living alone were predictors of psychological problems [27].

3.7. Emotional Disorders during the COVID-19 Pandemic in COVID-19 Survivors

The prevalence and severity of depression, anxiety, panic attacks, dysphoria, sleep disturbances, and other disorders have increased during the COVID-19 pandemic throughout the population, but people who have recovered from COVID-19 have been particularly affected [53,89]. They have higher levels of depression, anxiety, and PTSD (p < 0.001) than the general population [50]. Neurological diseases associated with SARS-CoV-2 include viral encephalitis, infectious encephalopathy, and acute cerebrovascular accidents, which inevitably lead to mental disorders in both the acute and the long-term periods [90]. The effects of the virus, both directly and indirectly, are mediated by the immune system, hypoxia due to edema, and psycho-socioeconomic factors such as exclusion, stigma, and discrimination [90–92]. Moreover, some drugs, both those that have been part of COVID-19 therapy in the past and those about to enter the market, worsen the mental state of patients [25]. Viral epidemics in the past have shown how many mental symptoms an infected patient can face. In a meta-analysis conducted by Rogers and colleagues, which included 3559 participants from 72 studies from different countries, confusion was observed during the acute period
of the disease among patients admitted to the hospital with SARS or MERS (36 (27.9%; 95% CI) out of 129 patients), in addition to a depressed mood (42 (32.6%; 24.7–40.9) out of 129). Steroid-induced mania and psychosis were reported in 13 (0.7%) of 1744 patients with SARS in one of the studies [93]. In a study by Guo and colleagues, patients who tested positive for COVID-19 showed higher levels of depression \((p < 0.001)\), anxiety \((p < 0.001)\), and post-traumatic stress symptoms \((p < 0.001)\) compared with patients with negative tests [94]. A number of studies have reported that, in patients with COVID-19, the severity of depression, anxiety disorders, reactive stress, and suicidal behavior positively correlates with markers of inflammation [50,91]. The pathogenetic role of inflammation in the development of depression should be remembered when choosing treatment, especially in the absence of an effect on standard antidepressant therapy.

Results from an intensive care unit (ICU) evidenced advanced delirium in 26 (65%) of 40 COVID-19 patients and agitation in 40 (69%) of 58 COVID-19 patients in one study, as well as altered consciousness in 17 (21%) of 82 patients who subsequently died. In another study, 15 (33%) of 45 patients with COVID-19 had a dyslexic syndrome at the discharge, including cognitive, behavioral, and emotional impairments. There have also been reports on hypoxic encephalopathy [95].

Since the beginning of the pandemic, various drugs have been offered as therapy, many of them with dubious evidence. For example, US-approved chloroquine caused behavioral changes such as delirium and depression. Olumiant R, which is in phase III clinical trials for the treatment of COVID-19 and has been used to treat rheumatoid arthritis, may lead to depression as a side-effect. The most serious side-effects of interferon-\(\beta\)-1b in clinical trials are suicide attempts, depressive behavior, and necrosis at the injection site [25].

A significant number of patients with SARS-CoV-2 coronavirus disease had persistent symptoms associated with COVID-19 after the acute phase of the disease. This condition is sometimes referred to as the “post-COVID syndrome”. It includes neurological and psychiatric symptoms among survivors. Psychiatric disorders include depression, anxiety, post-traumatic symptoms, cognitive impairment, and insomnia, while neurological disorders include anosmia, dizziness, headache, and seizures, which may persist long after the acute period of illness [95].

A notable problem in countries without access to free healthcare is financial hardship after treatment. The most common reason for bankruptcy in the US is medical bills. According to a survey published in the American Journal of Public Health, nearly 60% of people who file for bankruptcy reported that medical expenses “very much” or “somewhat” contributed to their ruin. This is more than the percentage of those who referred to housing or student loans. Many COVID-19 patients have incurred high costs, and some have remained on the threshold of poverty, which has been linked to depression, anxiety, and some medical conditions such as diabetes in many studies [51,52].

Table 2 summarizes the identified specific risk groups characterized by emotional disorders during the COVID-19 pandemic, describes their risk factors, and provides conflicting data on these risk groups.

### Table 2. Established specific risk groups for emotional disorders during the COVID-19 pandemic.

<table>
<thead>
<tr>
<th>Risk Groups</th>
<th>Risk Factors</th>
<th>Emotional Disorders and Their Symptoms</th>
<th>Discussion/ Controversial Data</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare workers</td>
<td>• Night shift work &lt;br&gt;• Working in COVID-19 hot zone &lt;br&gt;• Close contact with COVID-19 patients &lt;br&gt;• Belonging to the nursing staff &lt;br&gt;• Lack of personal protective equipment (PPE) &lt;br&gt;• Work experience over ten years</td>
<td>• Sleep problems &lt;br&gt;• Emotional burnout &lt;br&gt;• Anxiety about the infection of the family and for their own health &lt;br&gt;• Depression of moderate severity &lt;br&gt;• Living alone was a predictor of stress for doctors</td>
<td>-</td>
<td>[13,27,44,56,82–88]</td>
</tr>
</tbody>
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Table 2. Cont.

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<tr>
<td>People with comorbid mental or physical health problems/users of psychoactive substances and alcohol</td>
<td>• Reduced access to health care, including group and substitution therapy</td>
<td>• Increase in anxiety</td>
<td>-</td>
<td>[15,77,82]</td>
</tr>
<tr>
<td></td>
<td>• Increased access to health care, including group and substitution therapy</td>
<td>• Growth of relapses, including substance abuse, possible overdoses with consequences up to death</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Alcoholism associated with an increased risk of anxiety and depression</td>
<td>• Alcoholism associated with an increased risk of anxiety and depression</td>
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<tr>
<td>COVID-19 survivors</td>
<td>• High markers of inflammation</td>
<td>• Post-COVID syndrome: a complex of neurological, psychological, and cognitive impairments after suffering COVID-19</td>
<td>If standard antidepressant therapy fails, should the inflammatory component of depression be taken into account?</td>
<td>[53,89,95]</td>
</tr>
<tr>
<td></td>
<td>• Toxic treatment, including chloroquine, Olumiant R, interferon 1b</td>
<td>• Rates of anxiety, depression, and PTSD higher than the population average</td>
<td></td>
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<td></td>
<td>• Paid healthcare system</td>
<td>• Psychosis</td>
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<tr>
<td></td>
<td>• Paid healthcare system</td>
<td>• Suicidal behavior</td>
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4. Preventive Measures against Emotional Disorders during the COVID-19 Pandemic in Risk Groups

The adverse effects of risk factors are cumulative, worsening the mental state and leading to emotional disorders. Knowing this, it is possible to take preventive measures, avoiding the combination of risks whenever possible.

Physical activity has been found to be positively correlated with mental health. Exercise triggers the release of beta-endorphins and improves mood [93]. Consistent exercise within heart rate zones can improve mental health and reduce the likelihood of contracting infectious diseases, including COVID-19. There is also evidence that physical activity causes a weaker response to stress. Exercise should be a minimum of 30 min a day, several times a week [94,96].

While COVID-19 lockdown is a well-established risk factor for the development of emotional disorders in COVID-19, maintaining social connections is an important link in maintaining mental health. It is important to receive social support from family, friends, and colleagues in the professional environment. Equally important as stress reduction is helping others when needed [97].

Some studies have shown that meditation reduces the tone of the sympathetic nervous system, which leads to a normal emotional state. Daily meditation for 20–30 min can reduce the negative effects of stress. There are many different techniques that have been shown to be effective. It is up to the individual to try different techniques on their own to find the one that works best [98,99]. Managing sleep problems can reduce stress and, as a result, prevent the development of anxiety and depression. Sleep should take place in the dark, with observance of circadian rhythms for at least 7.5–8 h per day [100]. Controlling the information one consumes can help reduce stress levels. It is worth limiting the amount of disturbing news received to 2 h per day [55].

It is important for patients with comorbid mental or physical health problems to continue receiving therapy, as relapse also increases the risk of contracting COVID-19. Survivors of COVID-19, especially those who have experienced severe infection and/or toxic treatment, have a wide range of both immediate and long-term effects and should be monitored, especially if they are affected by other risk factors. In order to reduce levels of anxiety, depression, and stress among the population, the WHO advises treating people with COVID-19 with sympathy, abandoning stigmatization, supporting others, and reducing the viewing of news about COVID-19.

Healthcare workers should rest in a timely manner, as well as sleep and eat enough. Healthcare professionals are encouraged to use self-help strategies (e.g., work breaks,
healthy lifestyles) and emotion management (handling guilt, fear, depression, grief, burnout, and trauma). It is important to ensure that healthcare workers have access to affordable psychological support. A female nurse working at the forefront of care for patients with COVID-19 is already vulnerable; thus, it is advisable to reduce the number of night shifts.

5. Discussion and Conclusions

Currently, emotional disorders are difficult to consider without taking into account genetic influences [101]. However, it is known that environmental conditions can both reduce and increase the risk of depression and anxiety. For example, children who grew up in poverty are more likely to suffer from depression, regardless of genes, through long-term stress. Therefore, it is clear that the COVID-19 pandemic has become a trigger for the development of the emotional disorders considered in predisposed people. Thus, during the COVID-19 pandemic, the number of patients without anxiety (from 10 to six) and with mild anxiety (from 31 to 24) decreased, while the number of patients with moderate (from 20 to 25) and severe anxiety (from two to eight) increased [102]. As demonstrated earlier in this narrative review, there are modifiable and nonmodifiable risk factors of the COVID-19 pandemic associated with the development of emotional disorders such as stress, anxiety, depression, and even suicidal behavior. Interestingly, some risk factors do not always affect the COVID-19 pandemic, but only some elements of it. Thus, the gender difference was not found in all studies, and the same population showed a large difference in the first but not second wave of the COVID-19 pandemic. Perhaps women need more time to adapt and, over time, their risks of mental disorder are equalized with men’s. It can be assumed that the COVID-19 pandemic simply amplifies the effect of the identified risk factors (i.e., indirect or mediation effect) and is not a direct cause or link in the pathogenesis of the development of emotional disorders. However, the observational nature of most of the studies reviewed could not accurately assess the role of the COVID-19 pandemic in the development of emotional, mood, and sleep disorders. To date, we can talk about correlational evidence between risk factors and the development of emotional disorders, but not about causal effects.

As shown in our narrative review, citizens of different countries worldwide face high epidemiological risks of depression, anxiety disorders, panic attacks, sleep disorders, PTSD symptoms, and suicidal behavior during the COVID-19 pandemic. Thus, mitigating the dangerous impact on mental health should be an international public health priority.

Most studies, included in our narrative review, agree that age under 40, female sex, contact with a COVID-infected person, psychiatric history, working as a healthcare worker, especially a nurse, and watching news about COVID-19 for more than 3 h a day increase the likelihood of anxiety, depression, and sleep disturbances. Many of these factors act through the mechanism of neuroinflammation in response to stress. Moreover, psychiatric patients are often declined access to medical care, which still remains a significant problem. People who have been infected with SARS-CoV-2 have been hardest hit. They are starting to be affected by several damaging factors, both biological and socioeconomic, which lead to an increased risk of long-term somatic, neurological, and psychological consequences. For these patients, it is worth remembering the pathogenetic role of inflammation in developing depression and other cognitive disorders. Severely ill patients who are also included in different risk groups have a much greater risk of mental disorders and should be monitored. Personal protection measures and the policy of the authorities regarding quarantine measures were identified as risk factors; the rapid reaction of the authorities to the changing situation, on the contrary, was a protective factor. Information about the correlation of these and other sociodemographic factors with the likelihood and severity of mental disorders was mentioned in many studies and can be applied in practice to compose high-risk groups. During the limited resource period, these groups should be taken care of first as a measure for prevention, early detection, and adequate treatment of possible emotional disorders.
Further study of the risks and protective factors and their interaction and modification over time will help explain the inconsistencies observed in studies of at-risk groups, justify new preventive measures, and complement existing programs to maintain the mental health of citizens during this COVID-19 pandemic and future emergencies.

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